100% DESIGN REVIEW COMMENTS AND RESPONSES
ERDF CELLS 3&4

1/29/98

SPECIFICATIONS

D.R. Myers

Specification 02224, 2.3.3 Properties

Change last paragraph to read: For evaluating compliance with these requirements, test results should be considered acceptable when the average value of the data satisfies the particular criterion.

Response: Accepted with minor edits.

Specification 02224, 3.4.1 Lift Thickness

Add this sentence to the end of the paragraph: If mixing occurs so as to compromise the integrity of the admix, the first lift shall be sacrificed and the 3 feet of admix liner shall be measured from the next lift or the mixed material shall be removed and the subgrade shall be repaired per specifications.

Response: Accepted with minor edits.

R.C. Peck

Specification 0600X-SP-E0014 Unit heaters and Exhaust fans:
Unit heater spec does not call out voltage or number of phases.
Revise NEC to 1996 edition

Response: Accepted

Specification 0600X-SP-E0012 Electrical Distribution system Underground:
Revise NEC to 1996 edition
Add DOE order 6430.1A Division 16 Electrical to references

Response: Accepted

Specification 0600X-SP-E0013 Electrical Work:
Revise NEC to 1996 edition
Motor Control Centers and other equipment of sufficient weight to become dislodged during a seismic 2B event are not stated to be mounted for seismic 2B.

Response: Accepted

R.J. Rajagopal

General Comments:

In response to a comment on the 60% Design Review, it was indicated that a set of definitions will be included in the Procurement package which will clarify references to "Contractor" in the specifications, who in this context is a subcontractor to the ERC Team with BHI as the prime. It is not clear where such definitions to clarify this matter is provided.

Response: This is a BHI action. It is our understanding that the definitions will appear in Exhibit A or B, the General or Special Conditions.

To comply with US General Accounting Office guidance GAO/AIMD-10.1.14, all purchase orders and contracts should be "Year 2000 Compliant" and should be addressed in the specifications. This will assure that Bechtel and our customers and suppliers are in compliance with respect to the date handling capability of all microprocessor-based equipment/software/hardware that we use or furnish internally for all projects. We recommend including the following requirements to the relevant specifications.

" Year 2000 Warranty:
Any computer application or system or equipment that are provided under this specification ("Product") shall be Year 2000 Compliant. As used in this warranty, the term "Year 2000 Compliant" means that the Product, when configured and used according to the documented instructions, will, without manual intervention or interruption:

Correctly handle and process date information before, during and after January 1, 2000, accepting date input, providing date output and performing calculations, including but not limited to sorting or sequencing, on dates or portions of dates;
Function according to the documentation during and after January 1, 2000 without changes in operation resulting from the advent of the new century;
Where appropriate, respond to two-digit date input in a way that resolves any ambiguity as to century in a disclosed, defined and predetermined manner;
Store and provide input of date information in ways that are unambiguous as to century; and
Manage the leap year occurring in the year 2000, following the quad-centennial rule. The "quad-centennial rule" means (a) if the year is divisible by 4, it is a leap year, UNLESS (b) the year is also divisible by 100, then it is not a leap year, UNLESS (c) the year is also divisible by 400, then it is a leap year "

Response: This should be included in the General or Special Conditions.

Spec. 0600X-SP-M0018 (Section 13120) page 5, paragraph 1.6:

We recommend that the first sentence of this paragraph be corrected as follows:
"The metal building system shall be guaranteed against water leaks arising out of or caused by ordinary wear and tear by the elements for a period stipulated in the General and Special conditions of the contract."

Response: Accepted

B.G. Tuttle

The only comment I had dealt with the requirement to wear respirators while applying paint (09900-6, 3,4,2). I would change this to read that respiratory protection may be required depending on the toxicity, method of application, and the subcontractors safety plan.

Response: The paragraph will be revised to read, " Use of respirators will be directly related to the paint product used. Final determination of as to whether or not respirators must be used will be made by the Contracting Officer and will be dependent on toxicity, method of application and the Subcontractor's safety plan.

B.K. Gifford

Specifications 02275, 2.3.7, pg 7, 02276, 2.4, pg 5, 02277, 2.4, pg 5, last paragraph, clarify that the Contractor is responsible for protection of laydown areas, in Spec. 02275 change "Installer" to "Contractor".

Response: Accepted

Specification 02277, 2.4, e., typo in "Toll".

Response: Accepted

Specification 13120, 1.6, pg5, end of first sentence add "minimum" before "period". After first sentence insert: Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

Response: Previous comment requested that this sentence be revised to reference the general and special conditions. The intent of this comment will be included in the revision to the specifications made for the previous comment.

DIS

0600X-SP-A0012 section number 06100 Rough Carpentry, was given a duplicate number by BHI/DIS. Please change the number to 0600X-SP-A0022.

Response: Accepted

DRAWINGS

D.R. Myers

Please make the "scale" section of the title block consistent from drawing to drawing. If there is a scale state "as shown" or enter the scale, if there is no scale state "none".

Response: Accepted

0600X-DD-G0013, middle of first column there is a typo in the word "structur".

Response: Accepted

0600X-DD-E0043, Clarify direction in the notes to indicate that the conduit and pedestals for air monitors 1&2 are one of the first activities and air monitor no.1 is moved prior to excavation because the existing conduit for no. 1 must be removed prior to excavation. Air monitor no.2 and it's transformer, breaker, and receptacle will be moved to the new pedestal at a later date by operations. Air monitor no.3 is similar to no.2, the conduit and pedestal will be installed as part of Cells 3&4 construction, but the air monitor and it's transformer, breaker, and receptacle will be moved at a later date by operations.

Response: Accepted

G.E. Van Sickle

0600X-DD-C0108, Add note which states: The access road to the RCI Office & Shop Area must remain open Monday – Friday during working hours.

Response: Accepted

0600X-DD-C0137, Note 1: Please add building to the things not shown, Note 2: Please remove, not applicable to the current design.

Response: Note 1: Accepted. Note 2: This refers to the crest of the trench sideslope, where the primary geomembrane wraps over and down into the anchor trench, but the secondary riser pipe keeps going upward along the same line to the crest pad wall and therefore penetrates the geomembrane. This penetration needs a boot.

0600X-DD-M0012, Add note which states: Existing piping transfers a listed waste. Work shall comply with appropriate site and regulatory requirements for working with hazardous waste.

Response: Accepted

M.A. Buckmaster

Will the leachate transfer station still be operational for truck load out during the demolition and installation of new piping?

Accepted. 0600X-DD-M0012, Add a note which states: The leachate pump station must remain operational for truck load-out Monday – Friday during working hours.

Response: Accepted

The tie-in location at UP-1 appears to approximately 200 ft too far west. An as-built drawing of the existing pipeline will be obtained. MW should also locate the new cross-site transfer pipeline.

Accepted. 0600X-DD-C0109, Please show cross-site transfer pipeline. The termination and tie-in of the pipeline appear to be approximately 200 feet too far west. BHI will provide direction on correct termination and tie-in location.

Response: Please provide as-built documentation or specific location on pipelines. Drawings will be revised when updated information is received.

0600X-DD-C0107, Please add note: Maintain a minimum clearance of 18 inches between the leachate pipeline and all raw/sanitary water lines.

Response: This requirement is incorporated into design drawings by showing elevations on profile drawings. However, note will be added as requested.

R.C. Peck

Drawing 0600X-DD-E0038 Electrical Symbols:
Mercury Vapor lights are not a desired selection. Use HPS (High-Pressure Sodium) lights.

Response: Accepted

Drawing 0600X-DD-E0040 Electrical Details:
Detail C: Grounding of Pedestal Mounted Disconnect Switch not shown.

Response: Accepted

Drawing 0600X-DD-E0042 Ductbank, Conduit, and Cable Schedule:
Conduits C-119 & C-133 go from pull boxes in Phase II through pull boxes in Phase I; however, no updates of Phase I ductbank or conduit schedule are shown in this package to show the routing of Phase II cables through Phase I raceways.

Response: Updating Phase I drawings (Cells 1 and 2) is beyond the scope of this project. Contractor is at liberty to utilize any spare conduit within the existing ductbanks.

Drawing 0600X-DD-E0044 & E0045 Electrical Site Plans:
Symbols for pull boxes for Phase II drawings are not the same symbols for pull boxes as used on Phase I drawings. Phase I and Phase II site plan drawings should be consistent.

Response: Symbols for pull boxes are the same as in Phase I. The only exception is that the symbols shown for Cells 3 & 4 are smaller. This is due to the reduced size of drawing being used on Phase II and a slightly smaller scale.

Drawing 0600X-DD-E0057 Crest Pad Bldg Elect power plan:
Unit heaters UH-1, UH-2 do not show power source. No single line drawing shows these unit heaters as a load. Unit Heater mounting details are not shown.

Response: Power source is from the lighting panel circuit no. 6 and 9 as designated by the circuit number located in the UH outline on drawing 0600X-DD-E0057. Mounting details are considered unit specific and are to be supplied as part of the unit installation.

Drawing 0600X-DD-E0048 MCC One Line Diagram-1:
Air Monitors 1 & 2 were fed by #2 AWG for Phase I, but as shown in this drawing, they are now fed by #8 AWG. No calculation is shown in the package verifying that #8 AWG is now satisfactory.

Response: Wiring should be #2 AWG. This will be corrected on the drawings.

Drawing 0600X-DD-E0052 Control Schematics-1:
The Leachate Level Controller for Primary and Secondary sumps will most likely be 24Volts. This schematic shows it as 120 VAC.

Response: The design is for 120 V controller. It is possible that the Contractor may choose to use a 24 V controller instead. This is acceptable provided the Contractor includes the appropriate power supply to support the 24 V system. The change if made should be requested by the Contractor along with information identifying support equipment and record drawing documentation.

This dwg shows note 2 in the dwg body, but no note 2 exists in the notes.

Response: Reference to note 2 will be deleted.

Dwg shows CRF and RLH2 as coming from Leachate Pump Control Panel in the Leachate pump house. These wires do not show anywhere.

Response: Conductors for these relays are included in the schedule shown on drawing 0600X-DD-E0042. The CRF from the manholes are run in C118 and C132. The conductor wires from the crest pad building are run in C117 and C131. Each of these conductors are continued in C119 and C133 back to the leachate pump house.

Drawing 0600X-DD-E0053 Control Schematics –2
This dwg calls out RLH1 & RLH2 as interlocks for pumps for cell 3 & 4 as shown on dwg 0600X-DD-E0052. Drawing 0600X-DD-E0052 does not show RLH1 or RLH2 or reference them.

Response: A note indicating the specific schematic where this is called out will be added to the drawing.

Drawing 0600X-DD-E0054 Control Schematics-3:
Complete the table for MOVs for flood switch,

Response: No other MOV's exist. Table will be reduced to accommodate only the two MOV's.

Drawing 0600X-DD-E0056 Control Schematics-5:
Leachate Pump Station Control Panel no. 2 is not shown on any layout drawing. The power supply for this panel no. 2 is not shown and no conduit runs are shown anywhere. Phase I drawings must be revised to show these details.

Response: Notes will be added to the drawing defining control panel and power supply location. Contractor will be required to field route conduit between the two locations.

R.J. Rajagopal

General Comments:

Add a note to make reference to drawing 0600X-DD-C0107 (where the Table of co-ordinates is provided) on all the drawings where co-ordinate locations are indicated (Example drawings 0600X-DD-C0095, C0096, C0102, C0103, C0104 etc.)

Response: Accepted

Indicate metric equivalents for pipes on drawings 0600X-DD-C0107, C0137, C0139 etc.

Response: Piping shown on the referenced drawings are specifically desired to be conventional sizes. It is desired to ensure that no metric sizes are used so metrics will not be added.

Drawing 0600X-DD-C0140:

Show structural details of the Pipe support framework and also its base plate/anchorage details

Response: The pipe support framework is specified in Section 15060 to be a commercial off-the-shelf product (e.g., "Unistrut"). Therefore, it is not necessary to present structural details. The performance criterion defined in Section 15060 is: being able to support the piping and associated equipment. Since the Subcontractor will select some of the piping and associated equipment, it is also appropriate that he select and size the support system. Note 1 on Drawing C0140 establishes the requirement for following manufacturer's recommendations on anchorage.

Drawing 0600X-DD-C0158:

Provide detail S-142 which is called out on the detail S-144

Response: Accepted

Drawing 0600X-DD-C0160:

Calculation No. 0600X-CA-C0015 (sheet 15 of 16) shows allowable tension of the anchor bolt increased by 100% for "inspection provided" case. The drawing should specify the inspection requirements or make reference to specifications where such inspection requirements are spelled out.

Response: Loads do not exceed allowable tension even without the 100% increase. Therefore special inspection is not required. Normal inspection being performed by BHI should be sufficient coverage.

Drawing 0600X-DD-C0161:

Add a note to make reference to Spec 0600X-SP-C0054 to indicate the type of surface finish with Floor hardener applied on the surface of loading/unloading slab.

Response: Accepted

Provide metric equivalents on Sections A and B of the drawing for rebar spacing, PVC pipe sleeve, steel plate cover, etc.,

Response: Accepted

CONSTRUCTION QUALITY ASSURANCE PLAN

D. R. Myers

Change document number from BHI-01143 to 0600X-QA-G0002, Rev.0. The first CQA Plan was G0001 so it only makes sense to continue the tradition.

Response: Accepted.

DESIGN ANALYSIS

R.C. Peck

Calculation 0600X-CA-E0006 for Voltage Drop in "100% DESIGN ANALYSIS":

Page 1 of the voltage drop calculation 0600X-CA-E0006 for "Electric Load Cells 3 & 4" uses 6 amps for the two space heaters each for cells 3 & 4; but, subtracts 11.9 amps when considering "Electric Load cells 1 & 2" (stated in error as Cells 2 & 4 in calculation). There appears to be a load error here. The space heaters are 3 KW units per drawing 0600X-DD-E0057. It is assumed the heaters are 480V three phase units; this would mean that each heater draws 3 amps, and two would draw 6 amps. This makes the total load on the circuit breaker for cells 1 & 3 and circuit breaker for cells 2 & 4 as 68.6 amps, not 62.7 amps. Please check the load calculation in sizing the 80 amp circuit breaker and amperage used in the cable sizing and voltage drops in this calculation.

Response: Space heaters should not have been included in the load calculation. Cells 1 and 2 do not have heaters and power for heaters at Cells 3 and 4 is included in the lighting panel. Heaters will be 208V units. Calculation will be revised.

Voltage Drop calculation for cells 3 & 4 uses wrong values from Table 9 of NEC. This Calculation uses AC resistance values, but must use "Effective Z at 0.85PF" values due to long cable runs. This makes the selected cable sizes over 3% voltage drop. The total voltage drops from switchgear in Leachate pump house to the Cell 4 MCC is approx. 3.8%, and this does not include the voltage drop for the pump cable down the slope. The total voltage drops from switchgear in Leachate pump house to the Cell 3 MCC is approx. 3.1%, and this does not include the voltage drop for the pump cable down the slope. Also, these voltage drops should be evaluated for future cells 5 & 6 with regard to cable size selection.

Response: Calculation will be rerun using the lower load requirment due to the unit heaters (see above) and the effective Z value. Larger conductors will be used between cells 1 and 3 and cells 2 and 4 if necessary to minimize the voltage loss.

The calculation for VD7 is not complete in its formula.

Response: Calculation will be reviewed

R.J. Rajagopal

Calc. No. 0600X-CA-C0014:

Please include a sketch to show an element free-body that indicates the typical nature of element forces Qx, Qy, Mx, My, Mxy, VONT, VONB, Fx, Fy, and Fxy.

Response: Accepted

Calc. No. 0600X-CA-C0015:

Page 11 of 16: The second term of the denominator of the expression for the Factor of Safety for Overturning should be 2.5' instead of 2'. As a result the Factor safety drops down to a lesser value than a preferred value of 2.0

Response: The second term will be revised to 2.5. However, the FS is still greater than the 1.5 required by the code. The actual FS is larger than that shown in the calculations since a small conservative foundation section was used instead of the full section allowed..

Page 15 of 16: Please indicate where the need for inspection requirements is specified to enable using the "increase of Table Tension by 100% for inspection provided" towards the computation of the Allowable bolt tension loads.

Response: See response to similar comment on Drawing 0600S-DD-C0160

DIS

On the calculation coversheets, include the coversheet in the sheet counts.

Response: Accepted